CENTER FOR NEURAL ENGINEERING

AT

TENNESSEE STATE UNIVERSITY

AASERT ANNUAL PROGRESS REPORT

Period: June 1,1995 to May 30,1996

Submitted to

Dr. Joel Davis

Program Officer, Computational Neuroscience

Cognitive and Neuroscience Division

Office of Naval Research

(Grant # N00014-93-1-0723)

BY
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July 1996

REPORT DOCUMENTATION PAGE

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	JULY 1996	JUNE 1995 – MAY 1996

4. TITLE AND SUBTITLE OF REPORT	5. FUNDING NUMBERS
AASERT ANNUAL PROGRESS REPORT	N00014-93-0723

6. AUTHOR(S)

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7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)	8. PERFORMING ORGANIZATION REPORT NUMBER:
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9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSORING/MONITORING AGENCY REPORT NUMBER:
Office of Naval Research 800 North Quincy Street Arlington, VA 22217-5660	

11. SUPPLEMENTARY NOTES:

12a. DISTRIBUTION AVAILABILITY STATEMENT	12b. DISTRIBUTION CODE
UNLIMITED	

13. ABSTRACT (Maximum 200 words)

Four graduate students and one undergraduate student conducted research in the Center for Neural Engineering in the following areas:
1) developing frequency dependent orcillartory neural network architecture for spatial information processing. 2) long term potentiation learning rule as applied ot spatial navigation. 3) design and build a servo joint-based robotic arm. 4) design of a neural controller for the control of inverted pendulum and 5) design of intelligent flight control system for helicopter roll-axis. One undergraduate and one graduate student graduate as a result of this award.

14. SUBJECT TERMS	15. NUMBER OF PAGES:
Neural networks, spatial information processing, intelligent flight control.	
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT: unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE: unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT: unclassified	20. LIMITATION OF ABSTRACT: unlimited

REPORT ON AASERT GRANT

AASERT grant was awarded to Tennessee State University to provide research experiences to two graduate and one undergraduate minority U.S. citizen students in the area of biologically motivated neural networks. The students conducted research in the Center for Neural Engineering (CNE) funded by the Office of naval research(ONR) and their progress is stated as follows:

1. Ms. Carolyn Keaton, a graduate student in the electrical and computer engineering department received B.S.(E.E.) Degree from Morgan state University and joined TSU in Spring 1993 to pursue Master of Engineering degree. She gained research experience in Hippocampus based NN architecture at Meharry Medical College(MMC). Carolyn spent summer 1994 in Professor Bowers laboratory at CalTech and gained some experience in the use of Genesis. She is currently continuing her work under Dr. Geoffrey Yuen, a post-doc research associate in CNE on developing frequency dependent oscillatory neural network architecture for spatial information processing, and the results are very promising. The experimental data is provided by Dr. Teyler's laboratory at the North East Ohio Universities College of Medicine(NEOUCOM) under a subcontract from CNE. Carolyn is expected to graduate in August 1996 and she has a job offer from Lucent(A T&T)Technologies.

2. Mr. Jarvis Spruill, a graduate student in electrical and computer engineering department received B.S.(E.E.)degree from University of Memphis and joined TSU in Fall 1993 to pursue Master of Engineering degree. He also gained initial hippocampus experimental training in Dr. Chirawa's laboratory. Later on he continued research under Dr. Yuen on log term potentiation learning

rules as applied to spatial navigation. He also used data from Dr. Teyler's laboratory. Jarvis received Masters degree in May 1996 and is currently working for International Paper Company in Dallas,Texas.

3. Ms. Vivian Dorsey currently a graduate student in electrical and computer engineering is a protégé of CNE. She conducted research in CNE as undergraduate student. She entered the graduate program in Fall 1994 and is expected to graduate in December 1996. Vivian is conducting research in designing and building a servo joint based robotic arm. She is being jointly supervised by Dr. Saleh Zein-Sabatto and Dr. Amir Shirkhodaie ,Assistant professors in electrical and mechanical engineering departments respectively.

4. Mr. Lary Word, a senior in electrical and computer engineering department conducted research at CNE under the guidance of Dr. Saleh Zein-Sabatto on "The design of a Neural Controller for the Control of the Inverted Pendulum" as his senior project. Lary completed his senior project and graduated with B.S.(E.E.) Degree in May 1995 and is currently employed by Lucent (A T&T) Technologies in Napierville,Illinois.

5. Deimtra Moore, a graduate student in the electrical and computer engineering received B.S.,(E.E.) Degree from TSU in May 1995 and entered the Master of Engineering degree program in Fall 1995. She is conducting research at CNE under the guidance of D. Saleh Zein-Sabatto on "Design of intelligent Flight control System for Helicopter Roll-Axis. She will spend Summer 1996 at CalTech and interact with researchers in helicopter control systems area. Deimtra is expected to graduate in August 1997.

Vivian Dorsey and Deimtra Moore is a success story of AASERT in providing support for minorities to pursue

graduate studies to meet the manpower needs of the nation in critical technologies.

All five students are Afro-American U.S. citizens.

FORM A2-2
AUGMENTATION AWARDS FOR SCIENCE & ENGINEERING RESEARCH TRAINING (AASERT)
REPORTING FORM

The Department of Defense (DOD) requires certain information to evaluate the effectiveness of the AASERT program. By accepting this Grant Modification, which bestows the AASERT funds, the Grantee agrees to provide the information requested below to the Government's technical point of contact by each annual anniversary of the AASERT award date.

1. Grantee identification data: (R & T and Grant numbers found on Page 1 of Grant)

     a.   Tennessee State University
          University Name

     b.   N00016-93-0723   c.   4426206---03
          Grant Number   R & T Number

     d.   Mohan J. Malkani   e.   From: June 1995 To: May 1996
          P.I. Name   AASERT Reporting Period

NOTE: Grant to which AASERT award is attached is referred to hereafter as "Parent Agreement."

2. Total funding of the Parent Agreement and the **number of full-time equivalent graduate students (FTEGS)** supported by the Parent Agreement during the 12-month period **prior to** the AASERT award date.

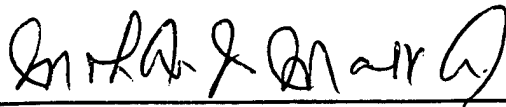   a. Funding: $1,323,264.00

     b. Number FTEGS: 3

3. Total funding of the Parent Agreement and the number of FTEGS supported by the Parent Agreement during the current 12-month reporting period.

     a. Funding: $ 1,323,264.00

     b. Number FTEGS: 4+2 (UGS)

4. Total AASERT funding and the number of FTEGS and undergraduate students (UGS) supported by AASERT funds during the current 12-month reporting period.

     a. Funding: $ 212,257.00

     b. Number FTEGS: 3

     c. Number UGS: 1

VERIFICATION STATEMENT: I hereby verify that all students supported by the AASERT award are U.S. citizens.

_____   July 25, 1996
Principal Investigator   Date